Abstract

A serial protocol which enables a printer control unit to communicate with a number of printheads over a clock wire and a data wire. In sync with pulses on the clock wire, the printer control unit transmits the following bits over the data wire: at least one read/write bit, at least one pen ID (which identifies one or more of the printheads), at least one address bit, and at least one data bit. The printheads determine whether the transmitted pen ID matches their own pen ID. If so, and the at least one read/write bit transmitted by the printer control unit is indicative of a read operation, a printhead will read data from a register which is determined by the at least one address bit transmitted by the printer control unit, and then output the read/write bit, the at least one pen ID bit, the at least one address bit, and the data read from its register to the printer control unit. The bits will be output on the data wire, and will be transmitted in sync with pulses on the clock wire. If the pen ID transmitted by the printer control unit matches a given prinhtead's pen ID, and the read/write bit transmitted by the printer control unit is indicative of a write operation, the printhead will write the data it receives from the printer control unit to a register which is addressed by the printer control unit. The printhead will also output the read/write bit, the at least one pen ID bit, and the at least one address bit to the printer control unit. The printhead may also read the data it has just written to one of its registers, and output the read data to the printer control unit as a form of write verification.